



PATENT APPLICATION  
Attorney Docket No. A3401-US-NP

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Inventor(s): Yiliang Wu et al.

Application No.: 10/733,136

Filed: 12/11/2003

Confirmation No.: 7393

Examiner: Brian Talbot

Art Unit: 1762

Title: NANOPARTICLE DEPOSITION PROCESS

CERTIFICATE OF MAILING

I hereby certify that this correspondence is being deposited with the United States Postal Service with sufficient postage as first class mail in an envelope addressed to: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450, on

6/28/2005

(Date of deposit)

Francie S. LePore

Francie S. LePore

Sir:

DECLARATION UNDER 37 CFR 1.131

We, Yiliang Wu, Yuning Li, and Beng S. Ong, hereby declare as follows:

1. We are the listed inventors in the above-identified patent application.
2. We have reviewed D. Huang et al., "Plastic-Compatible Low Resistance Printable Gold Nanoparticle Conductors for Flexible Electronics", *Journal of The Electrochemical Society*, Vol. 150, No. 7, pp. G412-G417 (Available electronically May 30, 2003).
3. Prior to May 30, 2003 but subsequent to January 1, 2002 (referred herein as "Prior Time Period"), our invention as claimed in the above-identified patent application was conceived and reduced to practice in Canada.

4. As evidence of conception and reduction to practice during the Prior Time Period, we are attaching two pages (photocopies) from our laboratory notebooks which describe embodiment(s) of the present invention, where each page is completed and signed and dated by a co-inventor (and also signed and dated by a witness) during the Prior Time Period. Any blanked out dates in said laboratory notebook pages are all during the Prior Time Period.

5. We hereby declare that all statements made herein of our own knowledge are true and that all statements made on information and belief are believed to be true, and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code, and that such willful false statements may jeopardize the validity of the application or any patent issuing thereon.

Respectfully submitted,

Wu yiliang

Yiliang Wu

Date: June 27, 2005

Yuning Li

Yuning Li  
Date: June 27, 2005

Beng S. Ong

Beng S. Ong  
Date: June 27, 2005

XEROX

29737 73

DATE

SUBJECT

PROJECT NO.

5 . . . . . 10 . . . . . 15 . . . . . 20 . . . . . 25 . . . . . 30 . . . . .

Spin coating gold nano particles from chlorobenzene  
solution Bu-C<sub>8</sub> (octyl)

annealing the thin film at 140°C in vacuum

measure conductivity by SCS 4200 System

the film is very conductive.

We can use gold nano particle as printable  
precursor to print electrodes for TFT!

Try micro contact printing gold nano particles  
as electrode (source drain) for  
TFT device.

May 12

Spin coating gold nano particles  
annealed at 140°C in vacuum for 2h  
measure conductivity using 4-probe  
technique

Conductivity ~ 300 to 1000 S/cm

5 . . . . . 10 . . . . . 15 . . . . . 20 . . . . . 25 . . . . . 30 . . . . .

WITNESSED AND UNDERSTOOD

SIGNED

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Srinivas

DATE

SIGNED

DATE

WORK AND RECORD

SIGNED

\_\_\_\_\_  
L. M. G. Reddy

DATE

SIGNED

DATE

DATE	SUBJECT	Synthesis of Au particles	PROJECT NO.
5	10	15	20
4 mmol	1 mmol	10 mmol	25
2.19 g	0.394 g	0.378 g	30
	+ 1-Octene-1-ol		
	3 mmol		
← (i- <del>CH<sub>3</sub></del> CH <sub>2</sub> ) <sub>6</sub> N <sub>3</sub>	0.435 g		5
← Toluene 8cm <sup>3</sup>			10
← HANCu(OAc) <sub>4</sub> in room temp			
Organic layer became red			
← 1-Octene-1-ol in 3cm <sup>3</sup> toluene			15
Became colorless			
← NaBH <sub>4</sub> in room temp at 0°C			
Became black			
Stirred overnight 18 hr			20
Separated organic layer, dried over MgSO <sub>4</sub> .			
Filtration			
Evaporate solvents (bath 40°C) to concentrate to small			
precipitate to 100 ml ethanol black solid. Centrifuge separated			
System was dried under vacuum. Redissolved in toluene (toluene			25
Yield: ① (better) precipitate to methanol. Solid collected.			
4.774 g - 9.585 g = 0.189 g			
② Recycled 0.05 g			30
The product was dried under vacuum (2 hr)			
The sample was given to Yiliang for conductivity testing.			
5	10	15	20
25	30		
WITNESSED AND UNDERSTOOD		WORK AND RECORD	
SIGNED	DATE	SIGNED	DATE
SIGNED <i>Carl Song</i>	DATE	SIGNED	DATE